LAMPIRAN

Lampiran 1. *Scoresheet* Uji Ranking Hedonik Roti Ubi Kayu

Uji Ranking Hedonik

Nama : Tanggal:
Produk : Roti Singkong
Atribut : *Overall* Rasa

Instruksi:
Sebelum mencicipi tiap sampel, berkumurlah dengan air putih terlebih dahulu.
Di hadapan Anda terdapat 4 sampel roti singkong. Rasakan sampel secara berurutan dari kiri ke kanan. Setiap pergantian sampel, minumlah air putih terlebih dahulu. Setelah merasakan semua sampel, Anda boleh mengulang sesering yang Anda perlukan. Urutkan sampel dari yang paling Anda tidak suka (=1) hingga yang paling Anda sukai (=4).

Kode sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....

Terima Kasih

Uji Ranking Hedonik

Nama : ... Tanggal: ...
Produk : Roti Singkong
Atribut : *Overall* Aroma

Instruksi :
Di hadapan Anda terdapat 4 sampel roti singkong. Bau-i sampel secara berurutan dari kiri ke kanan. Anda boleh mengulang sesering yang Anda perlukan. Urutkan sampel dari yang paling Anda tidak suka (=1), hingga sampel yang paling Anda sukai (=4).

Kode sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....

Terima Kasih

Uji Ranking Hedonik

Nama : ... Tanggal: ...
Produk : Roti Singkong
Atribut : *Overall* Warna

Instruksi :
Di hadapan Anda terdapat 4 sampel roti singkong. Amatilah warna bagian dalam sampel secara berurutan dari kiri ke kanan. Setelah melihat warna semua sampel, Anda boleh mengulang sesering yang Anda perlukan. Urutkan sampel dari yang paling Anda tidak suka (=1), hingga sampel yang paling Anda sukai (=4).

Kode sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....

Terima Kasih

Uji Ranking Hedonik

Nama : ... Tanggal: ...
Produk : Roti Singkong
Atribut : *Overall* Tekstur

Instruksi :
Di hadapan Anda terdapat 4 sampel roti singkong. Amatilah tekstur bagian dalam sampel dari segi sensoris dan visual secara berurutan dari kiri ke kanan. Setiap pergantian sampel, minumlah air putih terlebih dahulu. Setelah melihat dan merasakan tekstur semua sampel, Anda boleh mengulang sesering yang Anda perlukan. Urutkan sampel dari yang paling Anda tidak suka (=1), hingga sampel yang paling Anda sukai (=4).

Kode sampel	Ranking (jangan sampai ada yang dobel)
.....	.....
.....	.....
.....	.....
.....	.....

Terima Kasih

Lampiran 2. *Worksheet* Uji Ranking Hedonik Roti Ubi Kayu

1. Penelitian Pendahuluan

Tanggal Uji:

Jenis Sampel: Roti Ubi Kayu

Tujuan:

1. untuk mengetahui adanya perbedaan tingkat kesukaan tekstur, aroma, rasa, dan warna antar sampel roti ubi kayu dengan jenis hidrokoloid yang berbeda,
2. untuk mengetahui sampel mana yang tekstur, aroma, rasa, dan warnanya paling disukai panelis.

Identifikasi Sampel:
A: Roti singkong dari hidrokoloid *xanthan gum*
B: Roti singkong dari hidrokoloid *guar gum*
C: Roti singkong dari hidrokoloid *gum arabic*

Kode Kombinasi Urutan Penyajian:

No	Kode
1, 7, 11, 17, 23, 29, 35, 41, 47	ABC
2, 8, 12, 18, 24, 30, 36, 42, 48	ACB
3, 9, 13, 19, 25, 31, 37, 43	CAB
4, 14, 20, 26, 32, 38, 44	BAC
5, 15, 21, 27, 33, 39, 45, 49	BCA
6, 10, 16, 22, 28, 34, 40, 46, 50	CBA

Panelis	Kode Sampel
1	254 192 186
2	712 259 284
3	339 256 325
4	364 615 474
5	421 531 444
6	548 593 378
7	157 617 667
8	524 728 739
9	858 813 894
10	979 913 924
11, 31	123 115 150
12, 32	112 152 120
13, 33	250 211 230
14, 34	232 239 208
15, 35	320 360 345

Penyajian

Panelis	Kode sample
16, 36	375 330 389
17, 37	432 410 463
18, 38	445 415 412
19, 39	537 555 584
20, 40	585 556 543
21, 41	632 641 623
22, 42	683 635 622
23, 43	715 725 745
24, 44	717 747 727
25, 45	825 815 892
26, 46	898 818 834
27, 47	935 986 915
28, 48	988 937 917
29, 49	910 964 990
30, 50	908 992 966

Rekap Kode Sampel

Kode	Rekap

A	254	712	256	615	444	378	157	524	813	924	123	112	211
	239	345	389	432	445	555	556	623	622	715	717	815	818
	915	917	910	908	115	152	230	208	320	375	410	415	584
	543	632	683	725	747	892	834	935	988	990	966		
B	192	284	325	364	421	593	617	739	894	913	115	120	230
	232	320	330	410	412	584	585	632	635	725	727	892	898
	935	937	964	966	150	112	250	239	360	389	463	445	537
	556	641	622	745	717	825	818	986	917	910	992		
C	186	259	339	474	531	548	667	728	858	979	150	152	250
	208	360	375	463	415	537	543	641	683	745	747	825	834
	986	988	990	992	123	120	211	232	345	330	432	412	555
	585	623	635	715	727	815	898	915	937	964	908		

2. Penelitian Utama Tahap Satu

Tanggal Uji:

Jenis Sampel: Roti Ubi Kayu

Tujuan:

1. untuk mengetahui adanya perbedaan tingkat kesukaan tekstur, aroma, rasa, dan warna antar sampel roti ubi kayu dengan perlakuan tepung ubi kayu yang berbeda,
2. untuk mengetahui sampel mana yang tekstur, aroma, rasa, dan warnanya paling disukai panelis.

Identifikasi Sampel:
A: Roti singkong dari tepung ubi kayu *original*
B: Roti singkong dari tepung ubi kayu fermentasi (manifer)
C: Roti singkong dari tepung ubi kayu ekstrusi (ekstrudat)

D: Roti singkong dari tepung tapioka

Kode Kombinasi Urutan Penyajian:

No	Kode	No	Kode
1, 14, 27, 40	ABCD	8, 21, 34, 47	BCAD
2, 15, 28, 41	ABDC	9, 22, 35, 48	DCBA
3, 16, 29, 42	ACBD	10, 23, 36, 49	DABC
4, 17, 30, 43	CBDA	11, 24, 37, 50	CABD
5, 18, 31, 44	BCDA	12, 25, 38	CADB
6, 19, 32, 45	DCAB	13, 26, 39	ABCD
7, 20, 33, 46	BACD		

Penyajian

Panelis	Kode sampel

1, 14, 27, 40	123	115	150	192
2, 15, 28, 41	112	120	186	152
3, 16, 29, 42	211	250	230	284
4, 17, 30, 43	208	232	259	239
5, 18, 31, 44	320	360	378	345
6, 19, 32, 45	339	375	389	330
7, 20, 33, 46	410	432	463	421
8, 21, 34, 47	412	415	445	474
9, 22, 35, 48	524	637	584	555
10, 23, 36, 49	593	556	585	543
11, 24, 37, 50	641	623	632	667
12, 25, 38	683	622	617	635
13, 26, 39	715	725	745	785

Rekap Kode Sampel

Kode	Rekap												
A	123	112	211	239	345	389	432	445	555	556	623	622	715
B	115	120	230	232	320	330	410	412	584	585	632	635	725
C	150	152	250	208	360	375	463	415	537	543	641	683	745
D	192	186	284	259	378	339	421	474	524	593	667	617	785

3. Penelitian Utama Tahap Dua

Tanggal Uji:

Jenis Sampel: Roti Ubi Kayu

Tujuan:

1. untuk mengetahui adanya perbedaan tingkat kesukaan tekstur, aroma, rasa, dan warna antar sampel roti ubi kayu dengan perlakuan tepung ubi kayu yang berbeda,
2. untuk mengetahui sampel mana yang tekstur, aroma, rasa, dan warnanya paling disukai panelis.

Identifikasi Sampel:
A: Roti ubi kayu dari tepung ubi kayu *original*
B: Roti ubi kayu dari tepung tapioka
C: Roti ubi kayu dari tepung ubi kayu *original*-tapioka

Kode Kombinasi Urutan Penyajian:

No	Kode

1, 7, 13, 19, 25, 31, 37, 43, 49	ABC
2, 8, 14, 20, 26, 32, 38, 44, 50	ACB
3, 9, 15, 21, 27, 33, 39, 45	BCA
4, 10, 16, 22, 28, 34, 40, 46	BAC
5, 11, 17, 23, 29, 35, 41, 47	CAB
6, 12, 18, 24, 30, 36, 42, 48	CBA

Penyajian

Panelis	Kode sampel		
1, 7, 13, 19, 25,	123	192	185
2, 8, 14, 20, 26,	239	247	284
3, 9, 15, 21,	378	312	345
4, 10, 16, 22,	474	445	439
5, 11, 17, 23,	509	555	524
6, 12, 18, 24,	630	617	623
27, 33, 39, 45	815	818	825
28, 34, 40, 46	834	892	898
29, 35, 41, 47	908	910	917
30, 36, 42, 48	915	947	986
31, 37, 43, 49	988	992	935
32, 38, 44, 50	937	964	966

Rekap Kode Sampel

Kode	Rekap											
A	123	239	345	445	555	623	815	834	917	947	992	966
B	192	284	378	474	524	617	818	898	908	915	935	964
C	185	247	312	439	509	630	825	892	910	986	988	937

Lampiran 3. Data Pengujian Sensoris

Sensoris Penelitian Pendahuluan

Panelis	WARNA			TEKSTUR			RASA			AROMA		
	A	B	C	A	B	C	A	B	C	A	B	C
Kriz	3	1	2	3	1	2	1	2	3	1	2	3
Soleh	3	1	2	2	3	1	2	3	1	2	3	1
Yusi	2	1	3	2	1	3	2	1	3	2	1	3
Evan	3	2	1	2	1	3	3	1	2	2	1	3
William	1	3	2	2	3	1	2	3	1	2	1	3
Gizca	2	1	3	2	1	3	2	1	3	2	1	3
Ruth	1	3	2	1	2	3	1	2	3	1	2	3
Yohana	3	2	1	2	3	1	3	2	1	3	2	1
Anna	3	1	2	1	3	2	2	1	3	2	1	3
Marissa	2	1	3	2	1	3	3	2	1	2	1	3
Esther	3	1	2	3	1	2	1	3	2	1	3	2
Surya	3	2	1	3	2	1	3	2	1	3	1	2
Erni	3	1	2	2	3	1	1	2	3	1	2	3
Yenni	2	3	1	2	3	1	3	1	2	3	1	2
Ika	3	1	2	3	2	1	1	2	3	1	2	3
Wili	2	3	1	3	2	1	2	1	3	1	3	2
Hartono	2	3	1	3	2	1	3	2	1	3	1	2
Yanie	1	2	3	3	1	2	1	2	3	2	1	3
Ernest	2	1	3	3	2	1	3	1	2	2	1	3
Istana	1	3	2	1	2	3	2	1	3	1	2	3
Angeline	2	3	1	2	3	1	1	2	3	1	3	2
Jona	2	3	1	2	3	1	2	3	1	2	3	1
Errix	2	3	1	3	2	1	2	1	3	1	2	3
Anthony	3	2	1	3	2	1	3	2	1	3	2	1
Bayu	2	3	1	3	2	1	3	2	1	3	2	1
Santy	2	1	3	2	1	3	2	3	1	2	3	1
Randy	3	1	2	3	1	2	3	1	2	3	1	2
Sisca	3	1	2	3	1	2	2	1	3	2	1	3
Sherly	2	3	1	3	2	1	3	2	1	2	3	1
Ricky	2	1	3	2	1	3	3	1	2	2	1	3
Ivan	3	2	1	3	2	1	3	2	1	3	2	1
Inta	2	1	3	2	3	1	3	2	1	3	2	1
Angeliga	2	3	1	2	1	3	2	3	1	1	2	3
Yessica	2	1	3	3	2	1	2	3	1	1	3	2
Sherly	3	2	1	3	2	1	3	2	1	3	2	1
Fabrina	3	2	1	3	1	2	1	2	3	3	1	2
Arya	3	2	1	3	2	1	2	1	3	2	1	3
Endah	3	1	2	2	1	3	1	2	3	1	2	3
Sally	2	1	3	1	2	3	1	2	3	1	2	3
Erik	1	2	3	1	2	3	1	2	3	1	2	3
Adityas	3	2	1	3	2	1	3	2	1	3	2	1
Veni	3	2	1	3	1	2	2	3	1	3	2	1
Ratna	3	2	1	3	2	1	3	2	1	3	2	1

Ling Shia	3	2	1	3	1	2	3	1	2	3	1	2
Edwin	1	3	2	2	3	1	3	2	1	3	2	1
Ina	3	1	2	3	1	2	1	2	3	1	2	3
Elfira	3	1	2	1	2	3	1	2	3	1	2	3
Pulung	1	2	3	2	1	3	3	1	2	1	3	2
Marini	3	2	1	3	1	2	3	1	2	3	1	2
Gigie	3	2	1	2	1	3	2	1	3	1	2	3

Keterangan:
A: Roti ubi kayu dari hidrokoloid xanthan gum
B: Roti ubi kayu dari hidrokoloid guar gum
C: Roti ubi kayu dari hidrokoloid gum arabic

Sensoris Penelitian Utama Tahap Satu

Panelis	WARNA				TEKSTUR				RASA				AROMA			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Doni	3	2	4	1	1	3	4	2	4	2	1	3	3	2	1	4
Astuti	4	2	1	3	2	1	3	4	2	3	1	4	4	2	1	3
Felix	3	2	1	4	4	3	1	2	2	3	1	4	3	2	1	4
Angeliga	4	2	1	3	4	2	1	3	4	2	1	3	4	2	1	3
Agustinus	3	4	2	1	4	3	2	1	4	2	1	3	3	2	4	1
Yinyin	4	3	1	2	2	1	4	3	2	1	4	3	4	1	2	3
Ely Diaz	3	1	2	4	3	4	2	1	3	4	2	1	4	3	2	1
Atied	2	3	1	4	3	4	2	1	3	2	1	4	3	4	1	2
Maria	1	4	2	3	4	1	2	3	4	3	1	2	3	1	4	2
Ebrib	3	2	1	4	2	1	4	3	3	1	2	4	1	3	2	4
Ina	2	1	4	3	2	1	3	4	4	3	1	2	4	3	1	2
Wiwik	4	2	1	3	3	2	1	4	3	2	1	4	4	2	3	1
Rudy	2	3	1	4	3	2	1	4	3	2	1	4	4	3	1	2
Asthy	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3
Honik	3	2	1	4	3	2	1	4	3	2	1	4	3	4	1	2
Retno	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4
Agnes	3	2	1	4	4	3	2	1	1	2	4	3	2	3	4	1
Maya	1	4	2	3	4	3	1	2	4	2	1	3	4	2	1	3
Timotius	3	2	1	4	4	3	1	2	3	2	1	4	3	2	1	4
Asri	2	3	1	4	3	2	4	1	4	1	2	3	2	4	1	3
Devi	1	3	4	2	2	3	4	1	4	1	2	3	2	1	4	3
Deddy	1	4	2	3	2	1	3	4	3	2	1	4	3	2	1	4
Kezia	4	3	1	2	4	3	1	2	4	3	1	2	4	3	1	2
Indah	2	1	4	3	2	3	1	4	2	1	4	3	2	3	1	4
Indra	2	1	3	4	3	2	1	4	4	2	1	3	1	4	3	2
Lilyk	1	2	3	4	4	2	1	3	4	1	3	2	2	1	3	4
Arya	4	3	1	2	4	3	1	2	4	2	1	3	4	2	1	3
Yaya	3	2	1	4	4	3	1	2	3	1	2	4	3	1	2	4
Indriya	2	1	4	3	2	1	3	4	2	1	4	3	3	1	4	2
Hengky	1	2	3	4	1	2	3	4	2	3	1	4	4	2	3	1
Lanny	2	1	4	3	4	2	1	3	3	4	1	2	4	2	3	1
Ratna	2	3	1	4	2	4	1	3	3	2	1	4	2	4	1	3
Ivonne	4	3	1	2	1	2	4	3	1	2	4	3	1	2	4	3

Veni	2	3	4	1	4	2	1	3	4	3	1	2	4	3	2	1
Aprilia	2	3	4	1	4	2	1	3	4	2	1	3	3	2	1	4
Anastasia	2	4	1	3	3	4	2	1	4	3	1	2	4	1	2	3
Jessica	1	2	3	4	4	3	2	1	4	2	3	1	4	2	3	1
Melisa	2	1	4	3	4	1	3	2	3	1	4	2	4	1	3	2
Andika	3	1	2	4	3	4	2	1	4	2	1	3	4	2	1	3
Vine	2	3	1	4	2	1	3	4	3	2	1	4	4	2	1	3
Feronica	2	4	1	3	2	4	1	3	2	4	1	3	2	4	1	3
Febby	3	2	1	4	3	4	1	2	4	3	2	1	4	3	1	2
Atied	3	2	1	4	3	2	1	4	4	2	1	3	3	4	1	2
Surya	4	1	2	3	2	1	4	3	2	1	3	4	2	1	4	3
Linda	3	1	2	4	3	2	1	4	3	2	1	4	3	1	2	4
Dian	3	4	1	2	2	4	1	3	4	1	3	2	2	1	4	3
Pradita	2	3	1	4	3	2	1	4	3	2	1	4	3	2	1	4
Willy	3	1	2	4	4	3	1	2	3	2	1	4	2	1	3	4
Gizca	3	2	1	4	4	2	1	3	3	2	1	4	3	2	1	4
Amel	1	2	4	3	1	3	2	4	3	2	1	4	1	2	3	4

Keterangan:
A: Roti ubi kayu dari tepung ubi kayu *original*
B: Roti ubi kayu dari tepung ubi kayu manifer
C: Roti ubi kayu dari tepung ubi kayu ekstrudat
D: Roti ubi kayu dari tepung tapioka

Sensoris Penelitian Utama Tahap Dua

Panelis	WARNA			TEKSTUR			RASA			AROMA		
	A	B	C	A	B	C	A	B	C	A	B	C
Devi	3	1	2	2	1	3	3	1	2	2	1	3
Stephanie	2	3	1	2	3	1	1	2	3	2	1	3
Elfira	3	2	1	3	2	1	3	1	2	3	1	2
Kelvin	2	1	3	1	2	3	1	2	3	1	2	3
Agnesia	1	3	2	1	2	3	1	2	3	2	1	3
Tita	1	3	2	3	1	2	2	1	3	1	2	3
Maya	2	3	1	3	1	2	2	3	1	2	3	1
Octaviany	2	1	3	2	1	3	2	1	3	2	1	3
Irene	1	3	2	1	3	2	1	2	3	1	2	3
Fendy	3	2	1	3	2	1	3	2	1	3	2	1
Pramita	1	2	3	3	1	2	2	1	3	3	1	2
Vina	1	3	2	3	2	1	3	1	2	1	2	3
Eunike	1	2	3	3	1	2	3	1	2	2	1	3
Sherly	2	3	1	1	2	3	1	3	2	1	3	2
Rika	2	1	3	1	2	3	1	3	2	1	2	3
Ika	2	3	1	2	1	3	2	1	3	3	1	2
Sekar	3	2	1	2	1	3	2	1	3	2	1	3
Jilli	3	2	1	3	2	1	3	1	2	2	1	3
Ina	1	3	2	1	3	2	3	1	2	3	1	2
Kris	2	3	1	3	1	2	3	1	2	3	1	2
Esther	2	3	1\	1	2	3	1	2	3	1	3	2
Yudi	2	1	3	1	2	3	3	1	2	3	2	1

Jona	2	1	3	2	1	3	1	2	3	2	1	3
Hendra	1	3	2	1	3	2	2	1	3	1	2	3
Ricky	2	3	1	2	1	3	1	2	3	1	2	3
Ina	2	3	1	2	1	3	2	1	3	1	3	2
Kezia	1	3	2	1	2	3	1	2	3	1	2	3
Ambar	1	2	3	2	1	3	2	1	3	3	1	2
Lenny	2	1	3	3	1	2	2	1	3	1	3	2
Yoyo	1	2	3	1	2	3	1	2	3	1	2	3
Ria	1	3	2	1	3	2	1	2	3	1	2	3
Gigie	1	3	2	1	3	2	1	3	2	1	3	2
Andre	3	2	1	3	2	1	1	2	3	1	2	3
Atied	1	3	2	3	1	2	1	3	2	1	2	3
Dita	1	3	2	2	1	3	3	1	2	2	3	1
Sherly	1	2	3	2	1	3	1	2	3	2	1	3
Budi	1	2	3	1	3	2	2	3	1	1	3	2
Natasha	1	2	3	1	2	3	1	2	3	1	3	2
Lidwina	1	3	2	2	1	3	3	1	2	3	2	1
Sarah	1	2	3	1	2	3	1	3	2	1	2	3
Elfira	1	3	2	2	1	3	2	1	3	1	3	2
Yeye	2	1	3	2	1	3	2	1	3	1	2	3
Dewi	3	1	2	2	1	3	3	1	2	1	2	3
Veni	1	3	2	2	1	3	1	2	3	1	2	3
Santy	1	2	3	2	3	1	1	3	2	1	3	2
Billy	3	1	2	1	3	2	2	3	1	2	1	3
Astuti	3	1	2	2	1	3	1	3	2	2	1	3
Liviani	1	3	2	1	3	2	1	3	2	1	3	2
Lanny	1	3	2	1	3	2	2	1	3	1	3	2
Gita	1	2	3	1	3	2	1	3	2	1	3	2

Keterangan:
A: Roti ubi kayu dari tepung ubi kayu *original*
B: Roti ubi kayu dari tepung tapioka
C: Roti ubi kayu dari tepung ubi kayu *original*-tapioka

Lampiran 4. Hasil Uji Normalitas

Tabel 8. Normalitas Uji Fisik

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Baking loss	ekstrudat	.270	6	.195	.807	6	.068
	manifer	.173	6	.200(*)	.967	6	.870
	original	.150	6	.200(*)	.983	6	.964
	tapioka	.211	6	.200(*)	.966	6	.867
	original-tapioka	.228	6	.200(*)	.893	6	.333

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Vol.pengemb.	ekstrudat	.231	6	0.061	.895	6	.080
	manifer	.119	6	.200(*)	.952	6	.553
	original	.131	6	.200(*)	.971	6	.874
	tapioka	.148	6	.200(*)	.948	6	.486
	original-tapioka	.114	6	.200(*)	.970	6	.857

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Porositas	ekstrudat	.193	6	.200(*)	.938	6	.642
	manifer	.349	6	.056	.781	6	.059
	original	.322	6	.052	.797	6	.055
	tapioka	.117	6	.200(*)	.985	6	.973
	original-tapioka	.149	6	.200(*)	.956	6	.787

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Hardness	ekstrudat	.167	6	.200(*)	.897	6	.147
	manifer	.159	6	.200(*)	.930	6	.375
	original	.208	6	.162	.866	6	.058
	tapioka	.180	6	.200(*)	.930	6	.380
	original-tapioka	.198	6	.200(*)	.865	6	.056

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Springiness	ekstrudat	.214	6	.133	.874	6	.073
	manifer	.168	6	.200(*)	.931	6	.395
	original	.183	6	.200(*)	.932	6	.404
	tapioka	.155	6	.200(*)	.930	6	.379
	original-tapioka	.198	6	.200(*)	.892	6	.126

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Adhesiveness	ekstrudat	.208	6	.158	.896	6	.141
	manifer	.230	6	.079	.867	6	.060
	original	.137	6	.200(*)	.945	6	.569
	tapioka	.215	6	.131	.868	6	.062
	original-tapioka	.236	6	.063	.876	6	.078

* This is a lower bound of the true significance.
a Lilliefors Significance Correction

Tabel 9. Normalitas Uji Kimia

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
kdr_air	original	.282	6	.148	.870	6	.228
	original-tapioka	.273	6	.184	.798	6	.057
	tapioka	.262	6	.200(*)	.882	6	.280
kdr_lemak	original	.213	6	.200(*)	.933	6	.604
	original-tapioka	.149	6	.200(*)	.987	6	.981
	tapioka	.195	6	.200(*)	.927	6	.559
kdr_serat	original	.196	6	.200(*)	.903	6	.392
	original-tapioka	.147	6	.200(*)	.968	6	.879
	tapioka	.152	6	.200(*)	.973	6	.912
kdr_protein	original	.175	6	.200(*)	.980	6	.950
	original-tapioka	.266	6	.200(*)	.859	6	.186
	tapioka	.221	6	.200(*)	.908	6	.422
kdr_abu	original	.433	6	.001	.634	6	.001
	original-tapioka	.380	6	.007	.720	6	.010
	tapioka	.218	6	.200(*)	.937	6	.632
kdr_KH	original	.180	6	.200(*)	.968	6	.877
	original-tapioka	.252	6	.200(*)	.882	6	.278
	tapioka	.163	6	.200(*)	.921	6	.512

	roti	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
kdr_amilosa	biasa	.211	12	.147	.930	12	.385
	tapioka	.207	12	.166	.876	12	.078

biasa-tapioka	.200	12	.198	.842	12	.029

* This is a lower bound of the true significance.

a Lilliefors Significance Correction

Lampiran 5. Hasil Uji Deskriptif

Tabel 10. Deskripsi Statistik Karakteristik Fisik Roti Ubi Kayu

Perlakuan			*original*	manifer	ekstrudat	tapioka	*original*-tapioka
Baking loss	Mean		9.825212196	8.558013978	13.272464417	12.045625452	10.6075
	95% Confidence Interval for Mean	Lower Bound	9.648890926	8.265649432	12.513211234	11.202402501	10.3263
		Upper Bound	10.001533466	8.850378523	14.031717599	12.888848402	10.8887
	Std. Deviation		.1680153251	.2785921634	.7234871330	.8035013470	.26793
	Std. Error		.0685919692	.1137347744	.2953623852	.3280280513	.10938
	Minimum		9.579439	8.132443	12.71309	11.02564	10.26
	Maximum		10.04110	8.928047	14.62851	13.22581	10.89
Vol.pengemb	Mean		50.090715942	34.296436521	88.473692217	72.911378999	62.545821137
	95% Confidence Interval for Mean	Lower Bound	49.323993664	33.215791097	82.972075883	70.657653040	60.945637146
		Upper Bound	50.857438220	35.377081944	93.975308552	75.165104959	64.146005128
	Std. Deviation		1.3845211879	1.9513930000	9.9346329226	4.0697022027	2.8895581938
	Std. Error		.3574818335	.5038475061	2.5651111907	1.0507925903	.7460807175
	Minimum		47.41674	30.47742	70.94869	66.80343	57.05694
	Maximum		52.74499	36.94009	106.2693	80.44440	66.94798
Porositas	Mean		1.966967028	1.154803240	1.997256943	2.887905093	2.298079050
	95% Confidence Interval for Mean	Lower Bound	1.685819314	1.033579622	1.557407183	2.315267534	2.171432336
		Upper Bound	2.248114742	1.276026858	2.437106703	3.460542651	2.424725764
	Std. Deviation		.2679037219	.1155131514	.4191298097	.5456623891	.1206807822
	Std. Error		.1093712365	.0471580466	.1711090283	.2227657375	.0492677230
	Minimum		1.715333	.9333333	1.509375	2.187500	2.144000
	Maximum		2.325000	1.250000	2.566667	3.675000	2.450909
Hardness	Mean		9.291603	17.70878	3.47554462	5.690225848	7.672448430
	95% Confidence Interval for Mean	Lower Bound	7.409839	16.6148	2.705752059	5.092653823	7.345587042
		Upper Bound	11.17337	18.80275	4.245337182	6.287797872	7.999309818
	Std. Deviation		2.961684	1.721799	1.211566395	0.940510756	.5144428423
	Std. Error		0.854965	0.497041	0.349749092	0.271502069	.1485068567
	Minimum		5.693583	15.63584	2.110354	4.303228	7.052888
	Maximum		13.25321	20.71895	5.503381	7.035475	8.329747
Springiness	Mean		0.651771346	0.608155026	0.374945888	0.793296383	.736004658
	95% Confidence Interval for Mean	Lower Bound	0.606221012	0.569847805	0.335782264	0.744170789	.717945727
		Upper Bound	0.697321679	0.646462246	0.414109511	0.842421978	.754063589
	Std. Deviation		0.071691071	0.060291231	0.061639112	0.077318127	.0284227141
	Std. Error		0.02069543	0.017404579	0.017793679	0.022319821	.0082049308
	Minimum		0.5487932	0.5259615	0.2561883	0.7055421	.7008102

	Maximum		0.7660052	0.7033185	0.4454552	0.9442935	.7767158
Adhesiveness	Mean		0.000245315	0.000514131	0.000370108	0.000071399	.000155207
	95% Confidence Interval for Mean	Lower Bound	0.0001403	0.000235448	0.000231754	0.000027198	.000075084
		Upper Bound	0.000350331	0.000792814	0.000508462	0.000115599	.000235330
	Std. Deviation		0.000165283	0.000438616	0.000217753	6.95666E-05	.0001261046
	Std. Error		4.77131E-05	0.000126617	0.00006286	2.00822E-05	.0000364033
	Minimum		0.0000296	0.0000926	0.000078	0.0000029	.0000176
	Maximum		0.0005523	0.0013633	0.0008885	0.0002111	.0004522

Tabel 11. Deskripsi Statistik Karakteristik Kimia Roti Ubi Kayu

Analisa	Perlakuan	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
kdr_air	*original*	6	29.037233643	2.5415330161	1.037576509	26.370058316	31.704408970	24.73333	31.75433
	original-tapioka	6	25.752511347	2.0190255660	.8242637357	23.633673960	27.871348733	23.56667	27.80884
	tapioka	6	20.954127640	.7741093880	.3160288343	20.141749659	21.766505621	20.10050	22.36422
	Total	18	25.247957543	3.8652028111	.9110370395	23.325837405	27.170077681	20.10050	31.75433
kdr_lemak	*original*	6	8.219382239	.5026348263	.2051998086	7.691899338	8.746865139	7.598997	8.881700
	original-tapioka	6	6.962854220	.4162965507	.1699523552	6.525977782	7.399730657	6.369444	7.522844
	tapioka	6	5.322680536	.6430957163	.2625427268	4.647792972	5.997568100	4.421106	6.027435
	Total	18	6.834972331	1.3176942806	.3105835205	6.179698382	7.490246281	4.421106	8.881700
kdr_serat	*original*	6	3.356998266	.4441288912	.1813148606	2.890913579	3.823082953	2.908940	4.155031
	original-tapioka	6	2.407229349	.2367647785	.0966588161	2.158759952	2.655698746	2.101403	2.716044
	tapioka	6	.951195803	.1867849696	.0762546445	.755176999	1.147214607	.7253446	1.226551
	Total	18	2.238474473	1.0588824195	.2495809798	1.711904634	2.765044312	.7253446	4.155031
kdr_protein	*original*	6	3.065036513	.6127093330	.2501375378	2.422037502	3.708035524	2.234138	3.927745
	original-tapioka	6	2.170852235	.7807003744	.3187195932	1.351557438	2.990147031	.8544008	2.853961
	tapioka	6	1.328145688	.4439752245	.1812521264	.862222264	1.794069112	.8678423	1.977684
	Total	18	2.188011478	.9381809112	.2211313614	1.721465087	2.654557869	.8544008	3.927745
kdr_abu	*original*	6	2.209906877	.5965522161	.2435414224	1.583863720	2.835950033	1.810748	3.414877
	original-tapioka	6	1.625274151	.2280665558	.0931077815	1.385932979	1.864615323	1.173467	1.790739
	tapioka	6	1.382107444	.2342726269	.0956413994	1.136253400	1.627961488	1.079723	1.692322
	Total	18	1.739096157	.5137072620	.1210819628	1.483635546	1.994556769	1.079723	3.414877
kdr_KH	*original*	6	57.468439152	1.6496269135	.6734573674	55.737261876	59.199616427	55.36272	59.79778
	original-tapioka	6	63.488506	2.3993604435	.97953479	60.970531904	66.006480629	61.32794	67.49774

		267		93				
tapioka	6	71.012939645	.8182522261	.3340500725	70.154236597	71.871642693	70.19426	72.42099
Total	18	63.989961688	5.9327717938	1.3983677222	61.039663684	66.940259692	55.36272	72.42099

kdr_amilosa

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
original	12	15.638508378	.1284687334	.0370857289	15.556883239	15.720133517	15.43642	15.84302
tapioka	12	21.538855643	.4314178541	.1245396071	21.264745815	21.812965470	21.10434	22.55127
original-tapioka	12	17.157972058	.6017793774	.1737187428	16.775619683	17.540324433	15.97371	17.72235
Total	36	18.111778693	2.5716722673	.4286120445	17.241649983	18.981907403	15.43642	22.55127

Tabel 12. Deskripsi Statistik Karakteristik Sensoris Roti Ubi Kayu Tahap Satu

Perlakuan			*original*	manifer	ekstrudat	tapioka
Warna	Mean		2.5	2.3	2	3.2
	95% Confidence Interval for Mean	Lower Bound	2.229167	2.017257	1.650749	2.930693
		Upper Bound	2.770833	2.582743	2.349251	3.469307
	Std. Deviation		0.952976	0.994885	1.228904	0.947607
	Std. Error		0.134771	0.140698	0.173793	0.134012
	Minimum		1	1	1	1
	Maximum		4	4	4	4
Aroma	Mean		3	2.2	2.04	2.76
	95% Confidence Interval for Mean	Lower Bound	2.72	1.92	1.7	2.46
		Upper Bound	3.28	2.48	2.38	3.06
	Std. Deviation		0.969	0.99	1.195	1.061
	Std. Error		0.137	0.14	0.169	0.15
	Minimum		1	1	1	1
	Maximum		4	4	4	4
Tekstur	Mean		2.92	2.38	1.94	2.76
	95% Confidence Interval for Mean	Lower Bound	2.64	2.09	1.61	2.45
		Upper Bound	3.2	2.67	2.27	3.07
	Std. Deviation		0.986	1.008	1.15	1.098
	Std. Error		0.14	0.143	0.163	0.155
	Minimum		1	1	1	1
	Maximum		4	4	4	4
Rasa	Mean		3	2.2	2.04	2.76

	95% Confidence Interval for Mean	Lower Bound	2.72	1.92	1.7	2.46
		Upper Bound	3.28	2.48	2.38	3.06
	Std. Deviation		0.969	0.99	1.195	1.061
	Std. Error		0.137	0.14	0.169	0.15
	Minimum		1	1	1	1
	Maximum		4	4	4	4

Tabel 13. Deskripsi Statistik Karakteristik Sensoris Roti Ubi Kayu Tahap Dua

Perlakuan			*original*	tapioka	*original*-tapioka
Warna	Mean		1.66	2.26	2.08
	95% Confidence Interval for Mean	Lower Bound	1.44	2.03	1.86
		Upper Bound	1.88	2.49	2.3
	Std. Deviation		0.772	0.803	0.778
	Std. Error		0.109	0.114	0.11
	Minimum		1	1	1
	Maximum		3	3	3
Aroma	Mean		1.62	1.94	2.44
	95% Confidence Interval for Mean	Lower Bound	1.4	1.71	2.25
		Upper Bound	1.84	2.17	2.63
	Std. Deviation		0.78	0.793	0.675
	Std. Error		0.11	0.112	0.095
	Minimum		1	1	1
	Maximum		3	3	3
Tekstur	Mean		1.84	1.78	2.38
	95% Confidence Interval for Mean	Lower Bound	1.61	1.55	2.17
		Upper Bound	2.07	2.01	2.59
	Std. Deviation		0.792	0.815	0.725
	Std. Error		0.112	0.115	0.103
	Minimum		1	1	1
	Maximum		3	3	3
Rasa	Mean		1.78	1.78	2.44
	95% Confidence Interval for Mean	Lower Bound	1.55	1.55	2.26
		Upper Bound	2.01	2.01	2.62
	Std. Deviation		0.815	0.815	0.644
	Std. Error		0.115	0.115	0.091
	Minimum		1	1	1

	Maximum	3	3	3

Lampiran 6. Hasil Uji Beda

Tabel 14. Statistik Analisa Fisik Tahap Satu

Analisa		Sum of Squares	df	Mean Square	F	Sig.
Baking loss	Between Groups	81.471	3	27.157	85.206	0
	Within Groups	6.374	20	0.319		
	Total	87.846	23			
Vol.pengemb.	Between Groups	25919.885	3	8639.962	285.656	0
	Within Groups	1693.779	56	30.246		
	Total	27613.664	59			
Porositas	Between Groups	9.023	3	3.008	21.54	0
	Within Groups	2.793	20	0.14		
	Total	11.816	23			
Hardness	Between Groups	1408.741	3	469.58	133.322	0
	Within Groups	154.975	44	3.522		
	Total	1563.716	47			
Springiness	Between Groups	1.087	3	0.362	78.103	0
	Within Groups	0.204	44	0.005		
	Total	1.291	47			
Adhesiveness	Between Groups	0	3	0	6.237	0.001
	Within Groups	0	44	0		
	Total	0	47			

Tabel 15. Hasil Uji Beda Nyata antar Perlakuan pada Analisa Fisik Tahap Satu

Analisa	Roti	N	Subset for alpha = .05			
			1	2	3	4
Baking loss	Manifer	6	8.558014			
	Original	6		9.825212		
	Tapioka	6			12.04563	
	Ekstrudat	6				13.27246
	Sig.		1	1	1	1
Vol.pengemb.	Manifer	15	34.29644			
	Original	15		50.09072		
	Tapioka	15			72.91138	
	Ekstrudat	15				88.47369
	Sig.		1	1	1	1
Porositas	Manifer	6	1.154803			
	Original	6		1.966967		
	Ekstrudat	6		1.997257		
	Tapioka	6			2.887905	
	Sig.		1	0.89	1	

Hardness	Ekstrudat	12	3.475545			
	Tapioka	12		5.690226		
	Original	12			9.291603	
	Manifer	12				17.70878
	Sig.		1	1	1	1
Springiness	Ekstrudat	12	0.374946			
	Manifer	12		0.608155		
	Original	12		0.651771		
	Tapioka	12			0.793296	
	Sig.		1	0.124	1	
Adhesiveness	Tapioka	12	7.14E-05			
	Original	12	0.000245	0.000245		
	Ekstrudat	12		0.00037	0.00037	
	Manifer	12			0.000514	
	Sig.		0.109	0.247	0.183	

Tabel 16. Statistik Analisa Fisik Tahap Dua

Analisa		Sum of Squares	df	Mean Square	F	Sig.
Baking loss	Between Groups	15.221	2	7.61	30.62	0
	Within Groups	3.728	15	0.249		
	Total	18.949	17			
Vol.pengemb.	Between Groups	3916.785	2	1958.393	218.987	0
	Within Groups	375.605	42	8.943		
	Total	4292.39	44			
Porositas	Between Groups	2.611	2	1.306	10.198	0.002
	Within Groups	1.92	15	0.128		
	Total	4.532	17			
Hardness	Between Groups	78.083	2	39.042	11.806	0
	Within Groups	109.129	33	3.307		
	Total	187.212	35			
Springiness	Between Groups	0.122	2	0.061	15.298	0
	Within Groups	0.131	33	0.004		
	Total	0.253	35			
Adhesiveness	Between Groups	0	2	0	5.667	0.008
	Within Groups	0	33	0		
	Total	0	35			

Tabel 17. Hasil Uji Beda Nyata antar Perlakuan pada Analisa Fisik Tahap Dua

Analisa	Roti	N	Subset for alpha = .05

			1	2	3
Baking loss	*Original*	6	9.8252		
	Original-tapioka	6		10.6075	
	Tapioka	6			12.0456
	Sig.		1	1	1
Vol.pengemb.	*Original*	15	50.09072		
	Original-tapioka	15		62.54582	
	Tapioka	15			72.91138
	Sig.		1	1	1
Porositas	*Original*	6	1.966967		
	Original-tapioka	6	2.298079		
	Tapioka	6		2.887905	
	Sig.		0.13	1	
Hardness	Tapioka	12	5.690226		
	Original-tapioka	12		7.672448	
	Original	12			9.291603
	Sig.		1	1	1
Springiness	*Original*	12	0.651771		
	Original-tapioka	12		0.736005	
	Tapioka	12			0.793296
	Sig.		1	1	1
Adhesiveness	Tapioka	12	7.14E-05		
	Original-tapioka	12	0.000155	0.000155	
	Original	12		0.000245	
	Sig.		0.114	0.09	

Tabel 18. Statistik Analisa Kimia

Analisa		Sum of Squares	df	Mean Square	F	Sig.
kadar air	Between Groups	198.301	2	99.15	26.713	0
	Within Groups	55.675	15	3.712		
	Total	253.976	17			
kadar abu	Between Groups	2.172	2	1.086	7.041	0.007
	Within Groups	2.314	15	.154		
	Total	4.486	17			
kadar lemak	Between Groups	25.320	2	12.660	45.240	0
	Within Groups	4.198	15	.280		
	Total	29.517	17			
kadar serat	Between Groups	17.620	2	8.810	91.708	0
	Within Groups	1.441	15	.096		
	Total	19.061	17			
kadar protein	Between Groups	9.053	2	4.527	11.488	.001
	Within Groups	5.910	15	.394		
	Total	14.963	17			

kadar karbohidrat	Between Groups	552.624	2	276.312	90.616	.000
	Within Groups	45.739	15	3.049		
	Total	598.362	17			
kadar amilosa	Between Groups	225.260	2	112.630	598.285	.000
	Within Groups	6.212	33	.188		
	Total	231.472	35			

Tabel 19. Hasil Uji Beda Nyata antar Perlakuan pada Analisa Kimia

Analisa	Roti	N	Subset for alpha = .05		
			1	2	3
kadar air	Tapioka	6	20.95413		
	Original-tapioka	6		25.75251	
	Original	6			29.03723
	Sig.		1	1	1
kadar abu	Tapioka	6	1.382107444		
	Original-tapioka	6	1.625274151		
	Original	6		2.209906877	
	Sig.		1	1	1
kadar lemak	Tapioka	6	5.322680536		
	Original-tapioka	6		6.962854220	
	Original	6			8.219382239
	Sig.		1	1	1
kadar serat	Tapioka	6	.951195803		
	Original-tapioka	6		2.407229349	
	Original	6			3.356998266
	Sig.		1	1	1
kadar protein	Tapioka	6	1.328145688		
	Original-tapioka	6		2.170852235	
	Original	6			3.065036513
	Sig.		1	1	1
kadar karbohidrat	*Original*	6	57.468439152		
	Original-tapioka	6		63.488506267	
	Tapioka	6			71.012939645
	Sig.		1	1	1
kadar amilosa	*Original*	12	15.638508378		
	Original-tapioka	12		17.157972058	
	Tapioka	12			21.538855643
	Sig.		1	1	1

Tabel 201. Statistik Analisa Sensoris Tahap Satu

	warna	aroma	tekstur	rasa
Chi-Square	31.044	24.644	22.766	63.807

df	3	3	3	3
Asymp. Sig.	.000	.000	.000	.000

a. Kruskal Wallis Test
b Grouping Variable: perlakuan

Tabel 21. Hasil Uji Beda Nyata antar Perlakuan pada Analisa Sensoris Tahap Satu

Uji Warna

Perlakuan	Signifikansi
Original vs manifer	0.289
Original vs ekstrudat	0.000
Original vs tapioka	0.000
Manifer vs ekstrudat	0.074
Manifer vs tapioka	0.000
Ekstrudat vs tapioka	0.000

Uji Aroma

Perlakuan	Signifikansi
Original vs manifer	0.000
Original vs ekstrudat	0.000
Original vs tapioka	0.267
Manifer vs ekstrudat	0.002
Manifer vs tapioka	0.008
Ekstrudat vs tapioka	0.002

Uji Tekstur

Perlakuan	Signifikansi
Original vs manifer	0.009
Original vs ekstrudat	0.000
Original vs tapioka	0.513
Manifer vs ekstrudat	0.022
Manifer vs tapioka	0.068
Ekstrudat vs tapioka	0.001

Uji Rasa

Perlakuan	Signifikansi
Original vs manifer	0.000
Original vs ekstrudat	0.000
Original vs tapioka	0.886
Manifer vs ekstrudat	0.004
Manifer vs tapioka	0.000
Ekstrudat vs tapioka	0.000

Tabel 22. Statistik Analisa Sensoris Tahap Dua

	warna	aroma	tekstur	Rasa
Chi-Square	14.125	25.449	16.271	21.635
df	2	2	2	2
Asymp. Sig.	.001	.000	.000	.000

a Kruskal Wallis Test
b Grouping Variable: perlakuan

Tabel 23. Hasil Uji Beda Nyata antar Perlakuan pada Analisa Sensoris Tahap Dua

Uji Warna

Perlakuan	Signifikansi
Original vs tapioka	0.000
Original vs *original*-tapioka	0.008
Tapioka vs *original*-tapioka	0.231

Uji Aroma

Perlakuan	Signifikansi
Original vs tapioka	0.037
Original vs *original*-tapioka	0.000
Tapioka vs *original*-tapioka	0.001

Uji Tekstur

Perlakuan	Signifikansi
Original vs tapioka	0.674
Original vs *original*-tapioka	0.001
Tapioka vs *original*-tapioka	0.000

Uji Rasa

Perlakuan	Signifikansi
Original vs tapioka	1.000
Original vs *original*-tapioka	0.000
Tapioka vs *original*-tapioka	0.000

Lampiran 7. Hasil Uji Korelasi

Tabel 24. Hasil Uji Korelasi antar Karakteristik Fisik Roti Ubi Kayu (Tahap Satu)

Correlations

		hardnes	springiness	adhesiveness	porositas	vol.pengem	baking_loss
hardnes	Pearson Correlation	1	.177	.371**	-.617**	-.877**	-.762**
	Sig. (2-tailed)	.	.229	.009	.001	.000	.000
	N	48	48	48	24	48	24
springiness	Pearson Correlation	.177	1	-.248	.256	-.300*	-.459*
	Sig. (2-tailed)	.229	.	.089	.227	.038	.024
	N	48	48	48	24	48	24
adhesiveness	Pearson Correlation	.371**	-.248	1	-.373	-.262	-.208
	Sig. (2-tailed)	.009	.089	.	.073	.072	.330
	N	48	48	48	24	48	24
porositas	Pearson Correlation	-.617**	.256	-.373	1	.569**	.553**
	Sig. (2-tailed)	.001	.227	.073	.	.004	.005
	N	24	24	24	24	24	24
vol.pengem	Pearson Correlation	-.877**	-.300*	-.262	.569**	1	.925**
	Sig. (2-tailed)	.000	.038	.072	.004	.	.000
	N	48	48	48	24	60	24
baking_loss	Pearson Correlation	-.762**	-.459*	-.208	.553**	.925**	1
	Sig. (2-tailed)	.000	.024	.330	.005	.000	.
	N	24	24	24	24	24	24

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Tabel 25. Hasil Uji Korelasi antar Karakteristik Fisik Roti Ubi Kayu (Tahap Dua)

Correlations

		hardnes	springiness	adhesiveness	porositas	vol.pengem	baking_loss
hardnes	Pearson Correlation	1	-.502**	.107	-.090	-.629**	-.257
	Sig. (2-tailed)	.	.002	.534	.723	.000	.303
	N	36	36	36	18	36	18
springiness	Pearson Correlation	-.502**	1	-.251	.384	.685**	.543*
	Sig. (2-tailed)	.002	.	.140	.115	.000	.020
	N	36	36	36	18	36	18
adhesiveness	Pearson Correlation	.107	-.251	1	-.408	-.491**	-.537*
	Sig. (2-tailed)	.534	.140	.	.093	.002	.022
	N	36	36	36	18	36	18
porositas	Pearson Correlation	-.090	.384	-.408	1	.697**	.695**
	Sig. (2-tailed)	.723	.115	.093	.	.001	.001
	N	18	18	18	18	18	18
vol.pengem	Pearson Correlation	-.629**	.685**	-.491**	.697**	1	.719**
	Sig. (2-tailed)	.000	.000	.002	.001	.	.001
	N	36	36	36	18	45	18
baking_loss	Pearson Correlation	-.257	.543*	-.537*	.695**	.719**	1
	Sig. (2-tailed)	.303	.020	.022	.001	.001	.
	N	18	18	18	18	18	18

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Tabel 26. Hasil Uji Korelasi antar Karakteristik Kimia Roti Ubi Kayu

Correlations

		kdr_air	kdr_lemak	kdr_serat	kdr_protein	kdr_abu	kdr_KH	kdr_amilosa
kdr_air	Pearson Correlation	1	.813**	.831**	.587*	.371	-.957**	-.145
	Sig. (2-tailed)	.	.000	.000	.010	.130	.000	.566
	N	18	18	18	18	18	18	18
kdr_lemak	Pearson Correlation	.813**	1	.925**	.768**	.691**	-.933**	-.154
	Sig. (2-tailed)	.000	.	.000	.000	.001	.000	.541
	N	18	18	18	18	18	18	18
kdr_serat	Pearson Correlation	.831**	.925**	1	.840**	.570*	-.929**	-.119
	Sig. (2-tailed)	.000	.000	.	.000	.014	.000	.639
	N	18	18	18	18	18	18	18
kdr_protein	Pearson Correlation	.587*	.768**	.840**	1	.552*	-.759**	-.176
	Sig. (2-tailed)	.010	.000	.000	.	.018	.000	.484
	N	18	18	18	18	18	18	18
kdr_abu	Pearson Correlation	.371	.691**	.570*	.552*	1	-.569*	-.333
	Sig. (2-tailed)	.130	.001	.014	.018	.	.014	.177
	N	18	18	18	18	18	18	18
kdr_KH	Pearson Correlation	-.957**	-.933**	-.929**	-.759**	-.569*	1	.185
	Sig. (2-tailed)	.000	.000	.000	.000	.014	.	.461
	N	18	18	18	18	18	18	18
kdr_amilosa	Pearson Correlation	-.145	-.154	-.119	-.176	-.333	.185	1
	Sig. (2-tailed)	.566	.541	.639	.484	.177	.461	.
	N	18	18	18	18	18	18	36

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Lampiran 8. Perhitungan Harga Pokok Produksi Roti Ubi Kayu

Tabel 27. Harga Pokok Penjualan (HPP) Roti Ubi Kayu

Bahan	Harga per satuan (Rp)	Tepung berbasis ubi kayu				
		original	manifer	ekstrudat	tapioka	*original*-tapioka
Tepung Ubi kayu (46 g)	8000/kg	230	202	176.92	460	345
Yeast (1.7 g)	2000/sachet	309.09	309.09	309.09	309.09	309.09
Gula (17 g)	6000/kg	102	102	102	102	102
Garam (0.9 g)	1000/kg	0.9	0.9	0.9	0.9	0.9
Xanthan gum (1.8 g)	6000/ons	361.8	361.8	361.8	361.8	361.8
Improver(0.138 g)	3000/ons	8.28	8.28	8.28	8.28	8.28
Telur (15.5 g)	12500/kg	221.65	221.65	221.65	221.65	221.65
Minyak (4.3 g)	10000/l	74.98	74.98	74.98	74.98	74.98
Total		1308.70	1281.64	1255.62	1538.70	1423.70

Lampiran 9. Spesifikasi Mutu Roti dan Tepung Singkong

Tabel 28. Spesifikasi Persyaratan Mutu Roti Manis

No	Kriteria uji	Satuan	Persyaratan
1	Keadaan		
1.1	Kenampakan	-	Normal,tdk berjamur
1.2	Bau	-	Normal
1.3	Rasa	-	Normal
2.	Air	% b/b	Maks 40
3.	Abu (tidak termasuk garam dihitung atas dasar bahan kering)	% b/b	Maks 3,0
4.	Abu yang tidak larut dalam asam.	% b/b	Maks 3,0
5.	NaCl	% b/b	Maks 2,5
6.	Gula jumlah	% b/b	Maks 8,0
7.	Lemak	% b/b	Maks 3,0
8.	Serangga / belatung	-	Tidak boleh ada
9.	Bahan tambahan makanan		
9.1.	Pengawet		
9.2.	Pewarna	Sesuai SNI 0222-1987	
9.3.	Pemanis buatan		
9.4.	Sakarin siklamat		Negatif
10.	Cemaran logam		
10.1	Raksa (Hg)	mg/kg	Maks 0,05
10.2	Timbal (Pb)	mg/kg	Maks 1,0
10.3	Tembaga (Cu)	mg/kg	Maks 10,0
10.4	Seng (Zn)	mg/kg	Maks 40,0
11.	Cemaran arsen (As)	mg/kg	Maks 0,5
12.	Cemaran mikroba		
12.1.	Angka lempeng total	koloni/g	Maks 10^6
12.2.	E.Coli	APM/g	<3
12.3.	Kapang	Koloni/g	Maks 10^4

Sumber : SNI 01-3840-1995

Tabel 29. Spesifikasi Persyaratan Mutu Tepung Singkong

No.	Kriteria Uji	Satuan	Persyaratan
1.	Keadaan - Bau - Rasa - Warna	 - - -	 Khas Singkong Khas Singkong Putih
2	Benda-benda Asing	-	Tidak boleh ada
3.	Derajat putih	%b/b ($BaSO_4$=100%)	Min. 85 Maks. 1,5
4.	Air	% b/b	Maks. 12

5.	Abu	% b/b	Maks. 1,5
6.	Derajat Asam	ml. NaOH / 100 gram	Maks. 3
7.	Kehalusan	% (lolos ayakan 80 mesh)	Maks. 1,5
8.	Pati	% b/b	Min 70
9.	Cemaran Logam : - Pb - Cu - Zn - Raksa (Hg)	 Mg/kg Mg/kg Mg/kg Mg/kg	 Maks. 1.0 Maks. 10,0 Maks. 40,0 Maks. 0,05
10.	Arsen	Mg/kg	Maks. 0,5
11.	Cemaran mikroba - Angka lempeng total - E. Coli - Salmonela	 Koloni/g APM/gr Koloni/g	 Maks. 1 x $1,0^6$ <3 Maks. 1 x $1,0^4$

Sumber : SNI 01-2997-1992